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Polybinary modulation for bandwidth limited optical links

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Optical links using traditional modulation formats are reaching a plateau in terms of capacity, mainly due to bandwidth limitations in the devices employed at the transmitter and receivers. Advanced modulation formats, which boost the spectral efficiency, provide a smooth migration path towards effectively increase the available capacity. Advanced modulation formats however require digitalization of the signals and digital signal processing blocks to both generate and recover the data. There is therefore a trade-off in terms of efficiency gain vs. complexity. Poly binary modulation, a generalized form of partial response modulation, employs simple codification and filtering at the transmitter to drastically increase the spectral efficiency. At the receiver side, poly binary modulation requires low complexity direct detection and very little digital signal processing. This talk will review the recent results on poly binary modulation, comprising both binary and multilevel signals as seed signals. The results will show how poly binary modulation effectively reduces the bandwidth requirements on optical links while providing high spectral efficiency.

Biography

J J Vegas Olmos received the BSc and the MSc in Telecommunications and Electronic Engineering. He obtained the PhD degree from the Eindhoven University of Technology, The Netherlands. He also holds MA in East Asian Studies, a BEc in Business Administration, and an MBA. He was a Research Fellow at Osaka University, Japan and a Research Associate at the Central Research Laboratory, Hitachi Ltd. He is with the Technical University of Denmark, where he is an Associate Professor at the Department of Photonics Engineering.

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